REMARKS

Claim 2 has been amended to correct a typographical error. Support for the amendment can be found, for example, at page 7, lines 21-24 of the application.

Claims 1-14 are pending in this application.

I. Objection to the Drawings

The drawings have been objected to and corrected drawing sheets have been requested for failure of the diagram submitted with Amendment B on November 16, 2004 to read "annotated," "replacement" or "new" as required by 37 C.F.R. § 1.121. Applicants note that Diagram 2 submitted with Amendment B was submitted to further illustrate how the claimed invention was patentable over the disclosure of EP 0151886. The diagram submitted is not part of the application papers of the present application. Accordingly, applicants request the objection to the drawings be withdrawn.

II. Double Patenting

In response to the rejection of claims 1-14 under the judicially created doctrine of obviousness-type double patenting over claims 1 and 12-17 of U.S. Patent No. 6,809,217 and claims 1 and 11-20 of U.S. Patent No. 6,632,330, applicants submit herewith a terminal disclaimer in compliance with 37 C.F.R. §1.321(c). U.S. Patent Nos. 6,809,217 and 6,632,330 are assigned to Davy Process Technology Limited, the assignee of the present application.

III. Rejection under 35 U.S.C. § 103(a)

Applicants request reconsideration and withdrawal of the rejection of claims 1-14 under 35 U.S.C. §103(a) as obvious over EP 0151886 (EP '886) with or without JP 5186392 (JP '392).

Applicants note that the Examiner's comments in the latest Office action fail to address the deficiencies in the disclosure in EP '866 with respect to the invention defined in claim 1 as previously pointed out by applicants in Amendment B filed November 16, 2004 in response to the Office action mailed August 16, 2004. Applicants submit that the invention defined in claim 1 is patentable over the disclosure in EP '866 for the reasons already of record and for the reasons reiterated below.

Independent claim 1 is directed to a process for the recovery of purified ethyl acetate from a feedstock comprising ethyl acetate, ethanol and water. The process comprises providing (1) a first distillation zone maintained under distillation conditions, including use of a first distillation pressure, that are effective for distilling of a first distillate comprising ethyl acetate, ethanol, and not more than 10 mol % water and yielding an ethanol rich bottom product comprising ethanol; and (2) a second distillation zone maintained under distillation conditions, including use of a second distillation pressure higher than the first distillation pressure, that are effective for distilling a second distillate comprising ethanol, water, and a minor proportion of ethyl acetate, and yielding a purified ethyl acetate bottom product. The feedstock comprising ethyl acetate, ethanol and water is supplied to a zone selected from the first distillation zone and the second distillation zone. A first distillate comprising ethyl acetate, ethanol, and not more than about 10 mol % water

and an ethanol rich bottom product comprising ethanol and water are recovered from the first distillation zone. Material of the first distillate is supplied to the second distillation zone. A second distillate comprising ethanol, water, and a minor proportion of ethyl acetate and a purified ethyl acetate bottom product are recovered from the second distillation zone. Material of the second distillate is recycled to the first distillation zone.

In order to establish a *prima facie* case of obviousness, the prior art reference(s) must teach or suggest all the claim limitations, there must be some suggestion or motivation, either in the reference(s) itself or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings and obtain the claimed invention, and there must be a reasonable expectation of success. See MPEP § 2142. Applicants respectfully submit that the Office has failed to establish a *prima facie* case of obviousness with respect to the invention defined in independent claim 1.

EP '886 describes a process for recovering a product ester (e.g., ethyl acetate) from a reaction product mixture including an azeotrope of an unreacted primary C_{2+} alkanol (e.g., ethanol) and the product ester. It is said that such an azeotrope can be separated from the bulk of the product ester by distillation. In one preferred procedure of EP '886, the reaction product mixture is distilled in a plurality of stages, including a low pressure distillation stage at a pressure of not more than about 5 bar and a subsequent high pressure distillation stage at a pressure of from about 10 bar to about 40 bar. The low pressure distillation stage results in the production of a bottom product

comprising predominantly primary C_{2+} alkanol and an overhead product that is a first azeotrope of the primary C_{2+} alkanol and a major molar amount of the ester. The first azeotrope is thereafter subjected to distillation in the high pressure distillation stage to produce a bottom product comprising predominantly the ester and an overhead product that is a second azeotrope of a major molar amount of the primary C_{2+} alkanol and the ester. The second azeotrope can be recycled to the low pressure distillation stage (See page 10, line 17 to page 11, line 31).

Applicants note that in Examples 1-3 of EP `886, passing reference is made to the presence of water in the reaction product mixture. However, the cited reference does not teach that the pressure swing distillation system disclosed therein is suitable or could be modified for recovery of purified ethyl acetate from a water-containing reaction product mixture in accordance with the process of claim 1. Nothing in the disclosure of EP '886 teaches or suggests a process for separating an ester such as ethyl acetate from a feedstock comprising ethyl acetate, ethanol and water. The presence of water in the feedstock from which ethyl acetate is to be recovered causes particular difficultly in such removal because a binary azeotrope between water and ethyl acetate exists with a boiling point close to that of ethyl acetate. Further, ethyl acetate, ethanol and water form a ternary azeotrope which also has a boiling point close to that of ethyl acetate. The presence of water in the feedstock is not something that can be readily ignored. As previously explained in detail in applicants' Amendment B, the presence of water in the feedstock is not a trivial matter and completely changes the behavior of

the feedstock because of the formation of these azeotropes. The present invention has overcome such difficulties by the process defined by independent claim 1. Nowhere does the disclosure of EP '866 teach or suggest a process for the recovery of purified ethyl acetate from a feedstock comprising ethyl acetate, ethanol and water which comprises utilizing a plurality of distillation stages in which a first distillate comprising ethyl acetate, ethanol and not more than about 10 mol % water is recovered from a first distillation zone as called for in step (d) of claim 1.

The Office contends that the above distinction is not patentable inasmuch as such a material-in-process cannot form the basis for patentability of a method or process claim. The Office fails to cite any authority for such a contention. *All* claim limitations must be considered in weighing the differences between the claimed invention and the prior art in determining the obviousness of a process claim. MPEP § 2116.01. The primary reference, EP '866, simply does not teach or suggest a process for separating an ester such as ethyl acetate from a feedstock comprising ethyl acetate, ethanol **and water**, as required by claim 1 and certainly does not disclose a recovery scheme for such a feedstock including a plurality of distillation stages in which a first distillate comprising ethyl acetate, ethanol **and not more than about 10 mol % water** is recovered from a first distillation zone as called for in step (d) of claim 1.

The deficiencies of EP '886 cannot be overcome by resort to JP '392. JP '392 teaches separation of ethyl acetate from a composition comprising ethyl acetate, ethanol and water. The method comprises feeding the composition to a distillation column to obtain a quasi-azeotropic mixture comprising ethyl

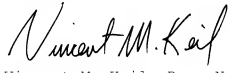
acetate, ethanol and water, condensing it, separating the condensate into an organic layer and an aqueous layer, returning the organic layer to the column, and recovering ethyl acetate as a bottom product from the column. The secondary reference fails to teach or suggest the use of a plurality of distillation stages, let alone such a process wherein a distillate comprising ethyl acetate, ethanol and not more than about 10 mol % water is recovered from a first distillation zone and supplying material of the first distillate to a second distillation zone.

Both EP '892 and JP '392 fail to teach or suggest a process wherein a distillate comprising ethyl acetate, ethanol and not more than about 10 mol % water is recovered from a first distillation zone in a process to recover ethyl acetate from a feedstock comprising ethyl acetate, ethanol and water. Furthermore, the Office has failed to show some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings and obtain the claimed invention. The ability of the present invention to effectively handle water present in the feedstock and to produce a product stream from the first distillation that contains not more than about 10 mol% water is a surprising result and one that is not suggested or taught by EP '892 and/or JP '392. Accordingly, the Office has failed to establish a *prima facie* case of obviousness with respect to independent claim 1 and the claims dependent therefrom.

In view of the above, applicants respectfully request withdrawal of the rejection under 35 U.S.C. §103(a) and allowance of claims 1-14.

The Commissioner is requested to charge any fee deficiency or overpayment in connection with this amendment to Deposit Account 19-1345.

Respectfully submitted,



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VMK/MJV/lam/sxm
*Enclosure

FILED VIA EFS
MAIL STOP AMENDMENT